

Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

714
RP58

U.S. DEPARTMENT OF AGRICULTURE

Office of Information

Picture Story No.82

For Release June 24, 1951



FOOD USES DEVISED for PROTEIN

--- of CHEESE WHEY ---

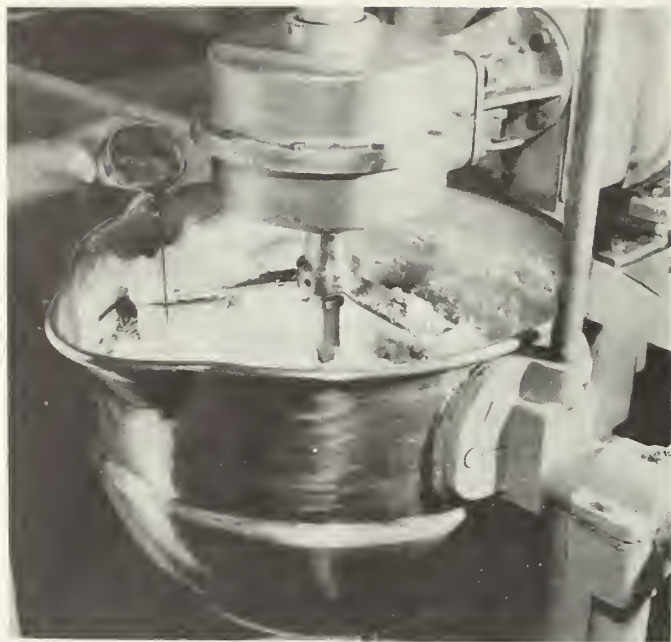


Swiss-cheese whey is heated and treated with acid to coagulate the crude protein. Here is the crude "precipitate" just before it is dipped from the kettle. A delicious food spread can be made from either separated or unseparated whey. N-11495

Cheese specialists J. P. Malkames, Jr. and H. E. Walter of the Bureau of Dairy Industry dip the crude protein from the whey. From 4 to 5 pounds of the hydrolyzed protein can be made from 100 pounds of Swiss-cheese whey. N-11496



A new and successful process for converting the protein of Swiss-cheese whey, one of civilization's oldest dairy byproducts, into a versatile product for use in human foods has been developed by the U. S. Department of Agriculture.



A commercial enzyme, being added here, breaks down, or "hydrolyzes," the crude protein into a soft and smooth-textured substance. The protein is stirred continuously for 20 to 30 minutes in the mixing kettle during hydrolysis. N-11497

This new product, called hydrolyzed whey protein, is a smooth, bland, semisolid substance that can be used as a base in preparing various types of appetizing food spreads. It can also be used as an ingredient in other foods.

J.P. Malkames, Jr., and H. E. Walter of the Bureau of Dairy Industry, who developed the hydrolyzed whey protein product, have made excellent spreads by blending it with cultured cream, cream cheese, or cottage cheese. They have also made other types of spreads experimentally in the Bureau's laboratories by using the whey protein as the principal ingredient and adding small amounts of nonfat dry milk solids, sugar, and gum. Any of these spreads can be made more flavorful by adding pickle relishes, pimientos, or olives.

The spreads can be used on bread or crackers, but they also are delicious when eaten alone. They spread well, the flavor is excellent, and they have been proclaimed as fine foods by members of taste panels.

When Swiss cheese is made, about half of the solids content of the milk used in its manufacture remains in the whey. In addition to fat and lactose, or milk sugar, whey contains proteins of very high nutritional quality, and minerals and vitamins. The fat is usually taken from the whey by separation and sold as cream or made into whey butter. The nonfat solids, however, are not now used to any extent in human foods, except in a few limited and special ways. Mostly, these solids are either wasted or fed to livestock.

Removing the crude protein from separated or unseparated whey is done easily by a combined heat and acid treatment, a procedure which is not new. However, this crude material is coarse and granular and has an objectionable chalky taste. Numerous attempts have been made in the past to convert this crude material into a smooth tasty food product, usable either alone or in combination with other products in human foods, but none have been successful.

In the Bureau of Dairy Industry's new method, the crude protein is treated with a commercial enzyme preparation which breaks down, or partially "hydrolyzes," the protein into a soft and smooth-textured substance. It is then homogenized, unless it is to be used as an

ingredient in foods that will be homogenized, in which case this step can be omitted. At this stage, the hydrolyzed whey protein is ready for use in spreads, cheese foods, or other foods. It can be stored for as long as 2 weeks at suitable temperatures without loss of quality.

From 4 to 5 pounds of hydrolyzed whey protein can be made from 100 pounds of Swiss-cheese whey. When a food spread is made by blending the whey protein with an equal amount of cultured cream, the spread will contain about 25 percent fat, 16 percent solids-not-fat, and 59 percent moisture.

The manufacture of hydrolyzed whey protein on a commercial scale would make it possible to conserve for human food much or all of the protein in the estimated 1 billion pounds of whey produced annually by the Nation's Swiss-cheese industry. A mixing kettle and in some cases a homogenizer are the only pieces of equipment needed in addition to the regular equipment in the Swiss-cheese factory. Bureau technologists point out that many small cheesemakers could profitably precipitate the crude protein and sell it to others who are equipped to make and market food spreads.

Similar methods for using the protein obtained from Cheddar- and cottage-cheese whey may be perfected soon in the Bureau's laboratories. Once these methods are available, substantial amounts of the protein from the 12 billion pounds of whey produced annually in the United States can be used in human food.



The hydrolyzed whey protein is homogenized to give it a completely smooth and creamy texture. However, this step can be omitted if the protein is to be used as an ingredient of a product that will be homogenized. At this stage the protein is ready for use in preparing spreads, cheese foods, or other similar foods. It can be stored for as long as 2 weeks at low temperatures without loss of quality. N-11498



A container of hydrolyzed whey protein is shown at the left. This versatile product can be made into a delicious food spread simply by flavoring it with readily available sugar, salt, pickle relish, and pimento. Or it can be mixed in equal proportions with cultured cream and then flavored to make a richer spread. An appetizing and ready-to-eat spread is shown in the container at the right. This spread has been made from whey protein, cultured cream, sugar, salt, pickle relish, and stabilizer. Hydrolyzed whey protein has many possibilities for use in other foods that require a smooth mild base or filler. N-11499



Whey protein spreads pass taste tests with flying colors. They spread well, the flavor is excellent and distinctive, and they can be eaten alone or on bread or crackers. N-11500

Editors and writers may obtain 8 x 10 glossy prints from Press Service, Office of Information, U. S. Department of Agriculture, Washington 25, D. C.